

1-2004

Transmission in Transition: Analyzing California's Proposed Electricity Transmission Regulatory Reforms

Brian Orion

Follow this and additional works at: https://repository.uchastings.edu/hastings_law_journal



Part of the [Law Commons](#)

Recommended Citation

Brian Orion, *Transmission in Transition: Analyzing California's Proposed Electricity Transmission Regulatory Reforms*, 56 HASTINGS L.J. 343 (2004).

Available at: https://repository.uchastings.edu/hastings_law_journal/vol56/iss2/4

This Note is brought to you for free and open access by the Law Journals at UC Hastings Scholarship Repository. It has been accepted for inclusion in Hastings Law Journal by an authorized editor of UC Hastings Scholarship Repository. For more information, please contact wangangela@uchastings.edu.

Transmission in Transition: Analyzing California's Proposed Electricity Transmission Regulatory Reforms

BRIAN ORION*

INTRODUCTION

California is an energy policy maverick, and has been for a generation.¹ In the seventies, the state adopted the radical notion that it could avoid building new power plants by simply using less electricity.² Conservation was supplemented by massive investments in renewable energy, making California the global leader in wind power.³ In the eighties, California aggressively implemented the Public Utility Regulatory Policies Act (PURPA) which encouraged states to decentralize electricity generation, resulting in a whopping 15,000 Megawatts (MW) of new electricity from small non-utility generators from 1983–1985, enough to power millions of homes.⁴ And the story of

* J.D. Candidate, University of California, Hastings College of the Law, 2005. My sincere thanks to Professor Ashutosh Bhagwat for his helpful input, to the members of the Hastings Law Journal for their hard work, and of course, to my mother and father for their commitment to my success.

1. Timothy P. Duane, *Regulation's Rationale: Learning from the California Energy Crisis*, 19 YALE J. ON REG. 471, 482 (2002) (stating that California's approach to electricity regulation during the 1970s and 1980s "constituted a complete challenge to the dominant regulatory paradigm of the time"); Matthew C. Hoffman, *The Future of Electricity Provisions*, REGULATION, Summer 1998, at 1 ("For better or for worse, California often has been the wave of the future."), available at <http://www.cato.org/pubs/regulation/regv17n3/reg17n3-hoffman.html>.

2. Duane, *supra* note 1, at 483. Today we have come full circle as once again dominant voices deny the benefits of conservation. See Joseph Kahn, *Cheney Promotes Increasing Supply As Energy Policy*, N.Y. TIMES, May 1, 2001, at A1 (quoting Vice President Dick Cheney who, in defending his National Energy Plan, stated that conservation may be a sign of "personal virtue," but is not an energy policy).

3. John Lehrer, *Winds of Change: Will California Reclaim Its Role as a World Leader in Wind Energy?*, WESTWAYS MAGAZINE, May–June 2002, at 67–73 (discussing how generous federal and state tax incentives in the 1980s led California to be the world's leader in wind production, accounting for 95 percent of global wind capacity by 1987); see John A. Wetenkamp, *Power and Public Utilities: Chapter 12: Expedited Power Plant Siting as Response to Power Crisis*, 33 McGEORGE L. REV. 414, 416, 417 & n.29 (2002) (stating that California led the nation in "green energy" during the 1970s).

4. Duane, *supra* note 1, at 485–86; see Public Utility Regulatory Policies Act, 16 U.S.C. §§ 2601–2645 (2001).

the nineties is probably the best known of them all, with California undertaking what was “the most radical electricity reform attempted to date in this country.”⁵ In 1996 the California Legislature passed AB 1890, which deregulated the State’s energy system.⁶ The promise was compelling: competition among generators of electricity would bring lower costs and greater investments in the state’s energy infrastructure. The reality turned out to be starkly different: Deregulation led to widespread blackouts in early 2001, forced the state into signing costly long-term energy contracts, and cost consumers billions. And it has left another legacy that threatens to add to California’s cost.

Deregulation is still having a dramatic, but often little-noticed impact on California’s system of high-power transmission lines. Transmission is one of the three basic parts of an electricity system (the other two are generation and local distribution).⁷ Transmission lines transport power long distances from the power plant to cities and towns, which is essential because energy is often generated far from where it is consumed. Before deregulation, new lines were planned and permitted by the California Public Utilities Commission (CPUC). But deregulation created a new organization called the California Independent System Operator (ISO) charged with ensuring transmission reliability, yet failed to remove the CPUC’s permitting power. As a result, both agencies review new transmission plans and they often disagree over when a new project is needed. This regulatory redundancy threatens the backbone of the electricity system by delaying or preventing new transmission projects. California’s system is aging, and new investments are needed.

A well-planned and robust transmission system ensures a variety of benefits: it helps the electricity system run reliably, preserves natural resources, and saves billions of dollars—all critical to energy security.⁸ But gaps in the system prove costly. During the California energy crisis, transmission bottlenecks along the single set of power lines that allow electricity to be transmitted between northern and southern California jeopardized security by preventing available power in the south from reaching desperate consumers in the north.⁹ These problems on the grid continue to threaten the state’s energy future. For example, on May 3,

5. Ashutosh Bhagwat, *Institutions and Long Term Planning: Lessons from the California Electricity Crisis*, 55 ADMIN. L. REV. 95, 101 (2003); see Paul L. Joskow, *California’s Electricity Crisis*, 17 OXFORD REV. OF ECON. POL’Y 365, 367 (2001), available at <http://oxrep.oupjournals.org/cgi/reprint/17/3/365.pdf>.

6. Public Utilities-Electrical Restructuring, A.B. 1890, 1995–1996 Reg. Sess. (Cal. 1995), 1996 Cal. Stat. 854.

7. Bhagwat, *supra* note 5, at 97–98; Wetenkamp, *supra* note 3, at 416.

8. See *infra* Part I.B.

9. CAL. ENERGY COMM’N, 2003 INTEGRATED ENERGY POLICY REPORT 6–7 (2003) [hereinafter IEPR]; CONSORTIUM OF ELEC. RELIABILITY TECH. SOLUTIONS, PLANNING FOR CALIFORNIA’S FUTURE TRANSMISSION GRID, CONSULTANT REPORT 3 (2003) [hereinafter CONSULTANT REPORT].

2004 the ISO declared a "transmission emergency" and asked large businesses to voluntarily curtail power use to avoid blackouts.¹⁰ Once again, the problem was not a lack of power, but rather transmission constraints which prevented the state from delivering available power to where it was needed.¹¹ Rolling blackouts could recur as soon as 2006, especially if new power plants come online without sufficient transmission upgrades.¹²

Critics allege that the state's energy agencies kill important new projects through redundant jurisdiction, fail to adequately assess the impact of new transmission lines in competitive markets, and act as islands rather than coordinating their planning processes.¹³ Such criticisms have attracted the attention of policy-makers, and currently the state is considering two very different proposals to fix the transmission regulatory system. The first proposal, coming from the Strategic Planning Division of the CPUC, would create an agreed-upon methodology for determining when a new transmission line is needed, and then erase some regulatory redundancy by taking away from the CPUC the responsibility for determining need and giving this job to the ISO. A competing proposal comes from the California Energy Commission (CEC), the agency responsible for licensing new power plants, and strives to achieve better agency coordination by giving the CEC power to license new transmission lines. These proposals require official action, either legislative or executive, before becoming final. They are still being refined at the planning stage and a decision is likely in 2005.

As the state begins debate on what would be the most substantial change to the regulatory structure of its transmission system in a generation, the policy-making bodies lack the institutional background and history that may be critical in correctly implementing new changes to the system.

Questions of transmission policy have received relatively little attention in regulatory debates.¹⁴ First of all, transmission is a natural

10. Mark Martin, *Crunch in Energy Use in Southern California*, S.F. CHRON., May 4, 2004, at B3.

11. *Id.* (quoting grid operator as saying that the state had enough power, "[i]t just wasn't in the right place"); see Arthur O'Donnell, *A Long Hot Summer: California's electricity supply, transmission problems have power executives beginning to sweat*, SAN DIEGO UNION-TRIB., May 16, 2004, at G1 ("Unlike the repeated blackout events of the 2001 crisis, the worry is less about power availability than about power deliverability. Continuing constraints on transmission lines within and between utility territories pose the most serious risk to smooth operations.").

12. Editorial, *Heat Is on Power Politics*, L.A. TIMES, May 5, 2004, at B12 (discussing California's potential transmission problems and the possibility of rolling blackouts by 2006 if not sooner); Michael A. Yuffee, *California's Electricity Crisis: How Best to Respond to the "Perfect Storm"* 22 ENERGY L.J. 65, 68 (2001) ("California's transmission system is over taxed. In order to meet growing demand and the hoped-for increase in new generation supply, California must upgrade its transmission system.").

13. See *infra* Part III.

14. See William A. Borders, Note, *Learning from the Storm: Lessons for Illinois Following California's Experience with Electricity Restructuring*, 77 CHI.-KENT L. REV. 333, 351-54, 356-66 (2001).

monopoly, meaning that it makes more sense for all generators to share one set of transmission lines than for each generator to build its own duplicate lines.¹⁵ As a natural monopoly incapable of competition, transmission will likely always remain regulated even when generation is deregulated, as it was in California.¹⁶ So transmission is sidelined in deregulation discussions.

Second, transmission poses significant technical challenges. Electricity is different than other commodities because it cannot be stored in quantity for long, and therefore must be produced, sold, and consumed almost simultaneously.¹⁷ The ISO was created because running a transmission system requires a central controller to balance system supply and demand all the time. Managing the grid is complicated by the fact that once electrons enter the power lines their direction cannot be controlled externally—they will travel along the path of least physical resistance.¹⁸ This makes central coordination imperative and partly explains why transmission is such a complex issue.¹⁹

Third, the institutional regulatory structure governing the transmission system is complicated.²⁰ You have three different state agencies (the CPUC, CEC, and ISO), a few regional bodies, numerous local jurisdictions, and one federal agency (the Federal Energy Regulatory Commission, or FERC), all with overlapping jurisdiction over transmission planning and licensing.²¹ Struggling to untangle this knot is challenging.

Last, regulatory policy in general is steeped in hazy assumptions. Looking back on the heady days of the deregulation debate in California, people were blinded by the allure of markets and failed to imagine that electricity might be different than airlines, telecommunications, trucking, and other deregulated industries.²² Deregulation debates were driven

15. See Paul L. Joskow, *Introducing Competition into Regulated Network Industries: From Hierarchies to Markets in Electricity*, in *FIRMS, MARKETS, AND HIERARCHIES: THE TRANSACTION COST ECONOMICS PERSPECTIVE* 237, 254 (Glenn R. Carroll & David J. Teece eds., 1999).

16. *Id.* at 255 ("the transmission network and its operation will be subject to continuing regulation").

17. Bhagwat, *supra* note 5, at 98; see Borders, *supra* note 14, at 335.

18. See Bhagwat, *supra* note 5, at 98; ENERGY INFO. AGENCY, U.S. DEP'T OF ENERGY, *ELECTRICITY TRANSMISSION FACT SHEET*, at http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/transmission.html (last modified Aug. 19, 2003).

19. See Bhagwat, *supra* note 5, at 98 (discussing the need for central coordination in transmission systems).

20. See *infra* Part II (discussing the overall transmission regulatory framework).

21. *Id.*

22. See Christopher G. Bond, Note, *Shedding New Light on the Economics of Electric Restructuring: Are Retail Markets for Electricity the Answer to Rising Energy Costs?*, 33 CONN. L. REV. 1311, 1311 (2001) (linking deregulation of the airlines and long-distance telephone industries with calls for change in electricity regulation); Duane, *supra* note 1, at 489–90.

more by ideology than by thoughtful economic analysis.²³ Yet despite this realization, over ten years after the CPUC first began considering deregulating,²⁴ California still lacks a political dialogue capable of rebutting unfounded fears of regulation and boilerplate notions of the power of markets.

This Note strikes at all these problems as it addresses the two proposals currently being considered to overhaul the transmission regulatory system. Part I seeks to broaden understanding of the physical and technological aspects of transmission by providing an overview of California's transmission infrastructure. Along the way this Part highlights some of the impressive strategic benefits of a robust transmission system and shows that transmission investments can accomplish things that generation and conservation cannot. Part II introduces California's byzantine regulatory structure by providing a thumbnail description of the key regulatory agencies and their functions, followed in Part III by criticisms of this regulatory structure.

Part IV details four factors to help weigh the reform proposals: reliability, rate stability, economic efficiency, and fairness. The first three factors are what Professor Timothy P. Duane calls "the three policy goals of the [electricity] regulatory regime," while fairness interjects an important element of social justice into the debate by drawing on the work of the Environmental Justice movement. Finally, Part V shows how these factors can add texture to regulatory policy discourse by applying them to illuminate the strengths and weaknesses of both proposals to restructure the transmission regulatory system. Drawing on this analysis, the Note concludes that neither proposal furthers all four policy goals, but that the CEC's proposal is better because it furthers reliability, rate stability, and fairness, with at most a minor decrease in efficiency. By employing this rational framework, California may lose its status as an energy policy maverick. But maybe that would not be so bad after all.

I. INTRODUCTION TO ELECTRICITY TRANSMISSION IN CALIFORNIA

A. PHYSICAL COMPONENTS OF CALIFORNIA'S ELECTRICITY TRANSMISSION SYSTEM

In general terms, "transmission" refers to the transportation of bulk electricity along a network of power lines.²⁵ These power lines are made

23. Joskow, *supra* note 5, at 370; see Bond, *supra* note 22, at 1313 ("[W]e should look past the political fads that favor retail [electricity] markets.").

24. See Joskow, *supra* note 5, at 367-68 (stating that the CPUC began looking into deregulation in 1993).

25. ENERGY DICTIONARY, at <http://www.energyvortex.com/frameet.cfm?source=/energydictionary/energyvortex.htm> (last visited Jan. 6, 2004) (defining the term "transmission"). "Bulk" transmission lines carry electricity from power plants to the outskirts of the city where it will be used. From there the system is no longer "bulk," but instead is called a local distribution system. *Id.*; see CONSULTANT

of copper or aluminum wire,²⁶ usually about one inch in diameter,²⁷ strung along steel towers or buried underground. The steel towers supporting these lines stand anywhere from 60 feet to 140 feet tall and usually carry three or six copper or aluminum wires.²⁸ One large transmission line may be enough to serve the electricity needs of a large city, but usually large cities require several transmission lines for reliable service.²⁹ Transmission lines in California are owned by the investor owned utilities (IOUs) or municipal utilities, and remain so even after deregulation.³⁰

Transmission lines vary in the amount of electricity they can carry.³¹ In California, a transmission line is defined as a line that is designed to operate at or above 200,000 volts (200 kilovolts, or kV).³² Most lines operate close to this level, but voltages up to about 750 kV are technically possible.³³ When a transmission line reaches the outskirts of a city it links to the local distribution system to deliver the power to the end consumer. Distribution lines carry less than 50 kV and are subject to different regulatory licensing processes.³⁴

Transmission lines exist to move power.³⁵ If electricity were

REPORT, *supra* note 9, at 6.

26. ENERGY DICTIONARY, at <http://www.energyvortex.com/frameset.cfm?source=/energydictionary/energyvortex.htm> (last visited Jan. 6, 2004).

27. WIS. PUB. SERV. COMM'N, ELECTRIC TRANSMISSION LINES 3 (2001), available at <http://psc.wi.gov/consumer/brochure/document/electric/6005b.pdf>. (last modified Sept. 1, 2004) [hereinafter ELECTRIC TRANSMISSION LINES].

28. *Id.* at 3-4. Sometimes an additional non-conducting wire is strung above the others to protect them from lighting strikes. *Id.* at 3.

29. *Id.* at 3.

30. Joskow, *supra* note 5, at 371; see CAL. PUB. UTIL. CODE § 330(f) (2004) ("The delivery of electricity over transmission and distribution systems is currently regulated, and will continue to be regulated to ensure system safety, reliability, environmental protection, and fair access for all market participants.").

31. Whether a given metal wire is classified a "transmission" line instead of a different type of line, like a "distribution" line, is not predestined. For purposes of definition, California distinguishes between three categories of lines: A "transmission" line is one that can carry 200 kV or more; a "power" line is a line carrying between 50 and 200 kV; and finally, a "distribution" line is one designed to carry 50 kV or less. CAL. PUB. UTIL. COMM'N GENERAL ORDER 131-D § I (adopted June 8, 1994, effective July 8, 1994) [hereinafter GO 131-D]. While this definition is logical, other definitions are used elsewhere. See, e.g., ENERGY DICTIONARY, at <http://www.energyvortex.com/frameset.cfm?source=/energydictionary/energyvortex.htm> (last visited Jan. 6, 2004) (defining "transmission voltage" as any voltage above 69 kV). Nevertheless, the definition has great practical importance because transmission and power lines are subject to different regulatory licensing processes than distribution lines. See *infra* Part II.B.1.

32. GO 131-D § I. Transmission capacity is usually expressed not in volts, but in thousands of volts, or kilovolts (kV). Thus, 1,000 volts = one kV.

33. ENERGY DICTIONARY, at <http://www.energyvortex.com/frameset.cfm?source=/energydictionary/energyvortex.htm> (last visited Jan. 6, 2004).

34. GO 131-D § I. For a discussion of the licensing process for transmission lines, see *infra* Part II.

35. See CONSULTANT REPORT, *supra* note 9, at 3 ("California's transmission grid is designed to reliably move power within the state and deliver it to consumers." (emphasis added)); EDISON ELEC.

generated in the same place it was used, no transmission lines would be needed. But, because power plants are often located far away from cities and towns, some way to move the electricity is essential.³⁶

Before deregulation, the California IOUs were vertical monopolies performing all the functions needed to generate, transmit, and distribute electricity to their customers.³⁷ As such, prior to the 1960s the IOUs operated as islands within California, each functioning independent of the others, with just a few small transmission lines connecting them.³⁸ California's early transmission system was designed to meet the specific needs of the ratepayers living on each "island," rather than the needs of California as a whole.³⁹

This began to change in the late 1960s as the IOUs sought to gain access to new power plants being built in neighboring states.⁴⁰ Unprecedented amounts of generation were then being built in Washington, Oregon, Canada's British Columbia, Nevada, Arizona, New Mexico, Utah, and Mexico's Baja California.⁴¹ The IOUs connected with these new power plants by building over 18,000 miles of new transmission lines across state and national borders.⁴²

In addition to connecting with other states, the IOUs sought to connect with the other in-state "islands." They did so by building major north-south transmission lines within California, connecting San Diego, Los Angeles, and San Francisco, linking the service areas of San Diego Gas & Electric, Southern California Edison, and Pacific Gas and Electric respectively.⁴³ In-state projects continued throughout the 1970s and 1980s, resulting in California's current 31,721 mile-long transmission

INST., FEDERAL SITING AUTHORITY: KEY TO EXPANDING ELECTRICITY INFRASTRUCTURE (2002), available at http://www.eei.org/industry_issues/energy_infrastructure/transmission/federalsiting.pdf (stating that "[e]lectric transmission grids serve as the backbone for developing power markets by providing the means to move power from where it's generated to where it's needed." (emphasis added)).

36. Bhagwat, *supra* note 5, at 97; see KERRY HATTEVIK, CAL. PUB. UTILS. COMM'N, REPORT ON THE CURRENT TRANSMISSION PLANNING PROCESS FOR INVESTOR OWNED UTILITIES 5, 8 (2003) (on file with author). But see CAL. ENERGY COMM'N, STAFF REPORT: UPGRADING CALIFORNIA'S ELECTRIC TRANSMISSION SYSTEM: ISSUES AND ACTIONS 8 (2003) [hereinafter ISSUES AND ACTIONS] (stating that thermal generating plants, such as those running on natural gas or nuclear energy, have been built close to where their electricity is used, thereby requiring relatively short transmission lines).

37. See Bhagwat, *supra* note 5, at 98-99.

38. ISSUES AND ACTIONS, *supra* note 36, at 8. One exception was the 1930s construction of a transmission line from Southern California to Nevada to access hydroelectric power from the new Hoover Dam. CONSULTANT REPORT, *supra* note 9, at 6.

39. IEPR, *supra* note 9, at 6.

40. CONSULTANT REPORT, *supra* note 9, at 3; IEPR, *supra* note 9, at 6.

41. CONSULTANT REPORT, *supra* note 9, at 3-8.

42. CONSULTANT REPORT, *supra* note 9, at 3-8; see also Joskow, *supra* note 5, at 366-67 (mentioning that during the 1960s and 1970s the IOUs built new transmission connections to the Northwest and Southwest).

43. CONSULTANT REPORT, *supra* note 9, at 3.

grid.⁴⁴

Transmission expansion faltered in the 1990s. From the 1960s to the 1980s, transmission investments totaled \$4.1 billion.⁴⁵ Since then, transmission capacity has remained unchanged, with small increases made primarily by municipal utilities.⁴⁶ In fact, the California IOUs have not added any significant transmission capacity in twenty years.⁴⁷ Nevertheless, California is still able to import vast amounts of electricity from neighboring states; currently, imported power serves 15% to 30% of the state's total electricity demand.⁴⁸

B. SOCIETAL BENEFITS OF A ROBUST TRANSMISSION SYSTEM

The ability to move electricity creates stunning benefits for society. A robust transmission system makes the electricity system more reliable, helps protect the environment, and saves money by increasing the efficiency of the whole system. Understanding these benefits is crucial to appreciating the importance of transmission regulation in California.

1. Reliability

A reliable supply of electricity depends on a robust transmission system.⁴⁹ Every day in California, transmission regulators perform an elaborate dance to ensure that Californians can light their homes, water their crops, and manufacture their silicon chips. Because electricity is a unique resource in that it cannot be stored,⁵⁰ the ISO must continuously monitor electricity demand and purchase electricity to meet that demand only hours before it is used.⁵¹ And because all the supply in the world means nothing without the means of transporting it to the user, the ISO also manages the transmission grid to ensure adequate capacity exists to deliver power to the consumer. Keeping the lights on requires immediate delivery of power over transmission lines.

In addition to its role in securing day-to-day system reliability, a robust transmission system acts as insurance against catastrophic events. When power plants break down, droughts limit hydroelectric supplies, or

44. ISSUES AND ACTIONS, *supra* note 36, at 6.

45. See CONSULTANT REPORT, *supra* note 9, at 1.

46. *Id.* at 4.

47. *Id.*; ISSUES AND ACTIONS, *supra* note 36, at 8; see IEPR, *supra* note 9, at 7.

48. CONSUMER POWER & CONSERVATION FIN. AUTH., ENERGY RES. CONSERVATION & DEV. COMM'N, & PUB. UTILS COMM'N, STATE OF CAL., ENERGY ACTION PLAN 4 (May 8, 2003) [hereinafter ENERGY ACTION PLAN]; Yuffee, *supra* note 12, at 67.

49. ENERGY ACTION PLAN, *supra* note 48, at 7; IEPR, *supra* note 9, at 6; see ISSUES AND ACTIONS, *supra* note 36, at 60–61, 63.

50. Bhagwat, *supra* note 5, at 98 (describing this fact as “the one basic and overwhelmingly important physical fact about electricity that defines the structure of the electricity industry and distinguishes it from most other sectors of the economy”).

51. See Bhagwat, *supra* note 5, at 98; ISSUES AND ACTIONS, *supra* note 36, at 60–61 (describing the role of the ISO).

heat waves increase demand for electricity to run air conditioners, electricity regulators must get creative to find emergency sources of power to prevent blackouts. Extensive transmission interconnections allow this to happen, giving grid managers a tool to bring power in from afar.

Numerous examples exist to illustrate the point. On March 8, 2004, as temperatures in Southern California climbed to record highs and too many people turned on the air conditioning, the state was forced to shut off power to 70,000 customers for 21 minutes, marking California's first rolling blackout since 2001.⁵² When demand rose faster than the ISO could turn on new power plants, the state's inadequate transmission system prevented it from moving readily available power from the north to the south.⁵³

When such emergencies arise, adequate transmission infrastructure can turn a catastrophe into an opportunity. For example, when the formation of OPEC and the 1973 Oil Embargo led to skyrocketing electricity prices in the mid-1970s,⁵⁴ California's transmission system allowed it to gain access to non-oil electricity generation.⁵⁵ In so doing, the state not only averted devastating economic losses, but turned the losses into savings of \$100 million every month of the crisis.⁵⁶

While the Oil Embargo involved too little supply, similar opportunities arise when too much supply exists. For example, in 1984 an abnormally wet rainy season hit the Pacific Northwest, leading to superior hydroelectric power production and reduced prices for electricity.⁵⁷ Through its interconnections to the Pacific Northwest, California was able to adapt on the fly by increasing imports of this cheap power while reducing imports of more expensive power from other places. This saved the state over \$900 million in 1984 alone.⁵⁸

Although these stories show the strategic benefits of a robust transmission system when unforeseen events occur, unfortunately the more common result of such events is serious system failure, as the Northeast power outage of August 14, 2003 graphically illustrates. The massive blackout in the Midwest, Northeast, and Canada was largely caused by the failure of three transmission lines that shorted out after

52. Elizabeth Douglass, *Unexpected Heat Wave Cited in Blackout*, L.A. TIMES, Mar. 10, 2004, at C1.

53. *Id.* The San Diego wildfires of 2003 were a close call. Fires took out a major transmission line from Arizona to San Diego, and narrowly missed another line. Thankfully the second line stayed intact as failure would have meant blackouts in large portions of San Diego. Elizabeth Douglass, *Sempre Sees Need for Market Reform*, L.A. TIMES, Mar. 1, 2004, at C1.

54. Bhagwat, *supra* note 5, at 99.

55. See CONSULTANT REPORT, *supra* note 9, at 11.

56. *Id.*

57. See *id.* at 12.

58. *Id.*

contacting nearby trees.⁵⁹ The temporary U.S.-Canada Power System Outage Task Force points to slow responses by transmission operators as a factor that worsened the situation.⁶⁰ While power plant outages and significant human error played important roles in the crisis, the fact is that all of this shows the critical importance of a robust transmission system as the last line of defense against electrical catastrophe. When 50 million people lose power⁶¹ resulting in \$6 to \$8 billion in economic loss,⁶² the meaning of "reliability" hits home.

2. *Environmental Protection*

In addition to ensuring system reliability, a healthy transmission system helps preserve natural resources. First of all, transmission can serve as a substitute for generation by getting more out of existing power plants through the strategic transfer of electricity from areas of surplus to areas of scarcity. Most of California's power plants are old and inefficient fossil fuel combustion plants.⁶³ These plants heavily pollute the environment by emitting nitrogen oxide, volatile organic compounds, benzene, formaldehyde, and other chemicals into the air.⁶⁴ Such emissions pose serious threats to human health.⁶⁵ Generation also requires water for cooling, burdening one of California's most critical resources and undermining an interest of "paramount importance to the state."⁶⁶ By substituting transmission for generation, we ease these environmental burdens.

Secondly, transmission is the key to unlocking California's renewable energy potential.⁶⁷ For example, inadequate transmission linking California's wind farm in the Tehachapi Mountains to customers in Southern California results in the voluntary removal of numerous

59. U.S.-CAN. POWER SYS. OUTAGE TASK FORCE, INTERIM REPORT: CAUSES OF THE AUGUST 14 BLACKOUT IN THE UNITED STATES AND CANADA 33-43 (2003) [hereinafter TASK FORCE REPORT]; Tom Diemer, *Answers sought at blackout forum; N.Y. officials show their anger at hearing*, CLEV. PLAIN DEALER, Dec. 6, 2003, at C1; Demetri Sevastopulo, *U.S. hesitation makes power failures likely*, FINANCIAL TIMES (LONDON), Dec. 30, 2003, at 8; Matthew L. Wald, *What's Next; To Avert Blackouts, a Sag-Free Cable*, N.Y. TIMES, Mar. 4, 2004, at G8.

60. TASK FORCE REPORT, *supra* note 59, at 23.

61. *Id.* at 21.

62. Mark McGranaghan et al., *Optimizing Power Quality and Reliability Initiatives*, TRANSMISSION & DISTRIBUTION WORLD, Feb. 1, 2004, at 2.

63. Yuffee, *supra* note 12, at 67.

64. Clifford Rechtschaffen, *Fighting Back Against a Power Plant: Some Lessons From the Legal and Organizing Efforts of the Bayview-Hunters Point Community*, 3 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 407, 410 (1996).

65. *Id.*

66. IEPR, *supra* note 9, at 40.

67. IEPR, *supra* note 9, at 16 ("[T]he extent to which the need for and location of new transmission capacity is identified and ultimately permitted will determine whether the state will continue to rely largely on conventional technology or broaden the mix of cleaner renewable resources."); Jim Crogan, *There's Cheap Energy Blowing in the Wind*, L.A. TIMES, Feb. 25, 2001, at M3 (interviewing Randall Swisher).

windmills from productive use.⁶⁸ These idle windmills would have the capacity to provide enough electricity every day to power about half a million homes for a month.⁶⁹ Transmission expansion would enable the state to use this wasted renewable energy.⁷⁰

And finally, California and the Pacific Northwest states have shown that transmission lines can protect endangered species through “environmental energy exchanges.”⁷¹ During the summer, Northwest endangered salmon migrate to the sea along the Columbia and Snake rivers.⁷² But during the 1990s their survival became jeopardized as large numbers of salmon met a gruesome fate after swimming into hydroelectric turbines.⁷³ To protect the fish, the Northwest stopped the plants at critical migratory periods, allowing the salmon to pass safely downstream, and made up for the lost electricity by importing power from California along the north-south transmission line.⁷⁴ In exchange for this service, California was able to cope with a demon of its own—air pollution—by increasing hydroelectric imports during peak demand periods.⁷⁵ This allowed the state to shut off its most inefficient and polluting class of power plants, known as “peaker” plants, which it would otherwise call upon for the last bit of supply during the highest consumption hours.⁷⁶ These environmental energy exchanges were made possible by a robust transmission system.⁷⁷

3. Improved Economic Performance

A vigorous transmission system not only helps ensure system reliability and environmental protection, but saves money also. California spends \$82 million per day on electricity, or nearly \$30 billion

68. Crogan, *supra* note 67, at M3; Mark Riley, *Silence of the Fans In Insane Power Struggle*, SYDNEY MORNING HERALD, Mar. 31, 2001, at 19; Susan Sward, *A Lost Opportunity That Worsened Crisis; Utilities and Federal Regulators Shut the Door on Renewable Power in California*, S.F. CHRON., Feb. 12, 2001, at A1.

69. Riley, *supra* note 68, at 19.

70. Southern California Edison has apparently realized this and is proposing to build a new 230 kV transmission line connecting Tehachapi with its customers. See CONSULTANT REPORT, *supra* note 9, at 20. The line is to be completed by 2006. *Id.*

71. *Id.* at 10.

72. Blaine Hardin, *Salmon's Return Spurs Debate on Spill at Dams; Need for Costly Measure Questioned*, WASH. POST, Mar. 7, 2004, at A.03.

73. *Id.*

74. CONSULTANT REPORT, *supra* note 9, at 10.

75. *Id.*

76. *Id.*

77. Unfortunately, hard economic times in the Northwest have led to criticism of the salmon protection measures. Hardin, *supra* note 72, at A.03. Opponents of the program, including Bonneville Power Authority (the utility stuck with the idle hydroelectric plants), claim it is costing residents millions in increased electricity costs. *Id.* Proponents of the program, including scientists, environmental groups and Native American tribes, insist that the program is needed to ensure the viability of the species, and argue that the fish must still be protected because their temporary recovery has resulted from recent favorable ocean conditions. *Id.*

per year.⁷⁸ For perspective, California's entire 2004–2005 budget allotment for K-12 education is just over \$27 billion, \$3 billion less than its electricity spending.⁷⁹ The state's \$7.5 billion higher education budget is about one fourth of its electricity costs.⁸⁰ These vast electricity expenditures present significant cost-saving opportunities.

Such opportunities have been realized in the past. For example, the transmission line expansions undertaken since the 1960s cost around \$4.1 billion and increased import capacity to 18,170 MW.⁸¹ Gaining the equivalent amount of electricity by building new “peaker” power plants would have cost about \$10 billion.⁸² Substituting transmission lines for new power plants thus saved California massive sums.

Examining specific transmission projects vividly illustrates the dazzling economic opportunities in transmission line expansion. Building the transmission line to the Pacific Northwest in the 1960s cost \$1.6 billion.⁸³ Over the 30-plus years of operation, the line has saved Californians \$7.2 billion.⁸⁴ Similar savings have accrued from transmission lines to the Southwest states of Nevada and Arizona. Constructing the lines cost \$1.3 billion, with overall savings of \$5.7 billion.⁸⁵

In addition to daily benefits, transmission lines can pay for themselves when unforeseen events arise. For example, in the case of the Pacific Northwest line discussed above, savings during an abnormally wet 1984 totaled \$900 million, which was greater than the total investment in

78. IEPR, *supra* note 9, at v (stating that California spends \$82 million per day on electricity. This \$82 million multiplied by 365 days per year equals \$29,930,000,000, or about \$30 billion).

79. See ELIZABETH G. HILL, CAL. LEGISLATIVE ANALYST'S OFFICE, THE 2004–05 BUDGET: PERSPECTIVES AND ISSUES, REPORT FROM THE LEGISLATIVE ANALYST'S OFFICE TO THE JOINT LEGISLATIVE BUDGET COMMITTEE, 68 fig.2 (2004), available at http://www.lao.ca.gov/analysis_2004/2004_pandi/pandi_04.pdf (last visited Jan. 6, 2004).

80. See *id.* In reality, normally the state does not pay directly for electricity, but rather consumers pay in their monthly utility bills. But a comparison with state spending on such programs as education is sensible in light of the fact that electricity costs likely impact citizens' willingness to absorb greater tax burdens, ultimately impacting state spending. So, while savings in electricity bills will not directly impact state programs, in effect the two issues are related.

81. CONSULTANT REPORT, *supra* note 9, at 1.

82. *Id.*

83. *Id.* at 13.

84. *Id.* This figure represents the actual amount of electricity imported times the difference between California's marginal cost of generation and that of the Pacific Northwest. *Id.*

85. *Id.* at 14. If these transmission savings seem incredible, consider the fact that California's power plants burn the most environmentally benign, yet most expensive, fossil fuel: natural gas. Not only is natural gas expensive, it exhibits significant price volatility. For example, in 2001 alone, natural gas prices shot up and down, first up to around \$60/mmbtu, then down to \$10/mmbtu, only to rise again to about \$36/mmbtu, and fall again all the way to \$4/mmbtu by year's end. Joskow, *supra* note 5, at 378 fig.2. Power plants in Arizona and Nevada burn primarily coal, a much cheaper (and more polluting) fuel source. CONSULTANT REPORT, *supra* note 9, at 14 (describing how California's higher cost natural gas generation was replaced by lower cost coal power from outside the state).

the transmission line at the time.⁸⁶ Additionally, because transmission allows a state to do more with less generation, transmission expansion allows reserve margins to be lowered.⁸⁷ For example, transmission expansion has allowed California to reduce its reserve margin by approximately 2,000 MW, representing savings of about \$1 billion.⁸⁸

While these savings are impressive, further savings can be had by reducing California's pervasive transmission congestion.⁸⁹ Congestion occurs when "local demand for energy approaches the limits of the transmission system's ability to supply it."⁹⁰ In other words, congestion is a bottleneck in the line, blocking power from flowing through. This congestion means that vast amounts of low-cost generation are unavailable under California's current transmission system.⁹¹ A recent study by the Department of Energy concluded that nationwide, bottlenecks cost consumers hundreds of millions of dollars annually.⁹² In California, such congestion cost consumers just under \$100 million during the summers of 2000 and 2001 alone.⁹³ Recent generation built

86. CONSULTANT REPORT, *supra* note 9, at 12.

87. A reserve margin is excess supply held on "reserve" just in case demand grows higher than expected. Duane, *supra* note 1, at 485 n.52.

88. See CONSULTANT REPORT, *supra* note 9, at 1.

89. See IEPR, *supra* note 9, at 17 ("[T]he transmission system regularly experiences congestion on major paths that prevents its optimal economic operation."); Alan Ramo, *California's Energy Crisis—the Perils of Crisis Management and a Challenge to Environmental Justice*, 7 ALB. L. ENVTL. OUTLOOK 1, 5 (2002) (stating that California's "congested transmission system" cannot "efficiently deliver electricity from everywhere to everywhere in the state, let alone across the country"); Yuffee, *supra* note 12, at 68 ("California's transmission system is severely constrained.").

90. ENERGY DICTIONARY, at <http://www.energyvortex.com/frameet.cfm?source=/energydictionary/energyvortex.htm> (last visited Jan. 6, 2004) (defining "congestion"); see also U.S. FED. ENERGY REGULATORY COMM'N, ELECTRIC TRANSMISSION CONSTRAINT STUDY 5 (2001) [hereinafter FERC Study] (offering four reasons why transmission lines become congested: (1) insufficient transmission capacity to meet demand in a particular area; (2) insufficient generation to meet demand within a constrained area; (3) more generation selling into a system than transmission lines can handle; and (4) overall system conditions), available at <http://www.ferc.gov/cust-protect/moi/constraintstudy.pdf> (last visited Jan. 6, 2004). Professor Josko has stated:

Historically, congestion on California's transmission network tends to occur in the north to south direction as a result of abundant suppliers of hydroelectric energy in the north-west and northern California in the spring and early summer, when demand is relatively low. Congestion tends to occur in the south to north direction in the autumn and winter at night when cheap energy from the south-west is (effectively) being exported to the north-west through California.

Joskow, *supra* note 5, at 373 n.27.

91. ISSUES AND ACTIONS, *supra* note 36, at 66 (offering \$900 million as the cost of such constrained generation).

92. SPENCER ABRAHAM, U.S. DEP'T OF ENERGY, NATIONAL TRANSMISSION GRID STUDY, at xi (2002), available at http://tis.eh.doe.gov/ntgs/gridstudy/main_screen.pdf (last visited Jan. 6, 2004).

93. FERC Study, *supra* note 90, at 9. Federal investigators have found evidence of intentional congestion used to drive down supply during the electricity crisis. Jonathan Peterson, *Glendale Settles Suit Over Energy Trading; The City Agrees to Pay \$25,000 But Admits No Wrongdoing During the State's Energy Crisis*, L.A. TIMES, Jan. 30, 2004, at C1. The investigation ended in a settlement of \$25,000 from Glendale. *Id.*

across the U.S.-Mexican border without adequate transmission lines into California has exacerbated the congestion problem in Southern California.⁹⁴

The significant benefits of transmission—including increased system reliability, environmental protection, and enhanced economic performance—show the importance of examining the regulatory environment governing this system.

II. OVERVIEW OF THE REGULATORY FRAMEWORK

In contrast to these rather straightforward benefits, transmission planning in California is maddeningly complex.⁹⁵ It is governed by a multitude of state laws⁹⁶ giving oversight to three separate state agencies⁹⁷ whose plans are impacted by local, regional, and federal policies.⁹⁸ This section describes the roles played by the ISO, CPUC, CEC, and FERC.

A. THE ROLE OF THE ISO

Before deregulation, each utility generated electricity and managed its transmission lines to transport that energy to consumers. But deregulation decentralized generation, which created a need for a central body to match supply with demand and ensure adequate capacity to transmit that supply along the grid. This is the role of the ISO.

The ISO is not a state agency, but rather a non-profit “public benefit” corporation with a five-member Board of Governors appointed by the governor.⁹⁹ The ISO’s basic job description is to “ensure [the] efficient use and reliable operation of the transmission grid.”¹⁰⁰ After deregulation, the ISO gained control of the IOUs’ transmission lines,¹⁰¹ which account for 80% of California’s transmission sector.¹⁰² The IOUs retain ownership of the lines¹⁰³ and they share the duty to ensure the grid runs smoothly.¹⁰⁴

94. Craig D. Rose, *Power Firms Gain from Grid Congestion; Deal with State Costs Consumers Millions*, SAN DIEGO UNION-TRIB., Feb. 15, 2004, at A-1.

95. Cf. Joskow, *supra* note 5 at 370 (describing California’s post-deregulation market structure as “the most complicated set of wholesale electricity market institutions ever created on earth”).

96. These laws include: CAL. PUB. RES. CODE §§ 25300–25323 (West 2004) (CEC must promulgate an Independent Energy Policy Report every two years); CAL. PUB. UTIL. CODE §§ 330–397 (West 2004) (electricity deregulation); *id.* § 1001 (CPUC grants a CPCN for new transmission projects); *id.* § 399.15 (extending CPUC responsibility for ensuring adequate transmission capacity).

97. HATTEVIK, *supra* note 36, at 3.

98. *Id.* at 2.

99. Joskow, *supra* note 5, at 369, 371.

100. CAL. PUB. UTIL. CODE § 345.

101. Joskow, *supra* note 5, at 370.

102. Issues and Actions, *supra* note 36, at 61.

103. Joskow, *supra* note 5, at 371.

104. ISSUES AND ACTIONS, *supra* note 36, at 12, 61. Another 7,500 MW of generation is controlled not by the ISO but rather by four other control entities: the Los Angeles Department of Water and

Ensuring the reliability of the grid is a complex task requiring continuous vigilance. The ISO conducts an annual control area study looking at the utilities' future transmission needs and planning accordingly.¹⁰⁵ Any especially large or complex transmission project likely to significantly impact the system will get special attention, including a detailed analysis of environmental impacts and potential alternatives.¹⁰⁶ The ISO faces unique challenges with San Francisco and San Diego due to their limited generation and vulnerability to outages.¹⁰⁷ To prevent shortages, the ISO determines "reliability must-run" power plants—plants located on the constrained side of the transmission bottleneck that "must run" to ensure that the area has power—then enters year-long contracts to purchase power at a fixed rate instead of relying on the spot market.¹⁰⁸ Finally, the ISO conducts interconnection studies to ensure that any new power coming into the system does not max out the lines.¹⁰⁹ In short, the ISO plays a central role in ensuring the reliability of the transmission grid.

The ISO conducts a needs assessment before any new transmission lines can be built.¹¹⁰ But despite significant study by the ISO, a new transmission project is not ready for construction at this point because the ISO does not have statutory authority to grant a permit. That is the role of the CPUC.

B. THE ROLE OF THE CPUC

The CPUC is a state agency established in 1911 to regulate electric, telephone, taxi cab, and other utilities.¹¹¹ The Commission plays an extensive role in dealing with California's electric utilities and is the gatekeeper for new transmission projects. Its two main jobs are: (1) issuing permits for new transmission lines; (2) planning for the IOUs' electricity needs each year.

1. *Permitting Process*

Under California Public Utilities Code § 1001, the CPUC must issue

Power (LADWP, which controls the area around Los Angeles), the City of Pasadena, Sacramento Municipal Utility District (SMUD, which controls an area around Sacramento), and the Imperial Irrigation District (IID, which controls an area roughly east of San Diego county, south and east of the borders with Mexico and Arizona). See *id.* at 12; Joskow, *supra* note 5, at 371 n.17. Each of these entities had the choice of joining the ISO or retaining control of their lines, and each chose not to join. See Joskow, *supra* note 5, at 371 n.17. They are required to coordinate with the ISO and other western control areas. ISSUES AND ACTIONS, *supra* note 36, at 12.

105. HATTEVIK, *supra* note 36, at 10.

106. *Id.*

107. See IEPR at 7 (describing the CEC's concern about reliability in San Diego and San Francisco).

108. *Id.*

109. *Id.* at 11.

110. HATTEVIK, *supra* note 36, at 6.

111. See CAL. CONST. art. 12; CAL. PUB. UTIL. CODE § 301 (West 2004).

a certificate of "public convenience and necessity" (CPCN) before any utility can construct new transmission lines of 200 kV or more.¹¹² Given their significant economic, social, and environmental impacts, new transmission projects cannot be granted a CPCN without a finding that they are really necessary.¹¹³ This process is time-consuming because the CPUC essentially duplicates the work already done at the ISO in determining the need for a new line.¹¹⁴ It conducts its own needs assessment focusing on whether the project will lower electricity rates (economic criteria) or whether the project will not impact rates, but is needed to ensure the overall reliability of the system (reliability criteria).¹¹⁵ While the deregulation law created the ISO and gave it responsibility to ensure system reliability and to identify and procure needed facilities to ensure reliability, it did not divest the CPUC of authority to grant a CPCN.¹¹⁶ So, deregulation introduced a significant regulatory inefficiency which blocks development of the state's transmission infrastructure.

An important step here is an analysis of potential environmental impacts under the California Environmental Quality Act (CEQA).¹¹⁷ The Commission conducts environmental studies similar to those required under the National Environmental Policy Act (NEPA).¹¹⁸ Where a transmission project will have a "significant effect on the environment,"¹¹⁹ the CPUC must create an environmental impact report setting forth in detail the potential environmental impacts of the project, measures to reduce these impacts, and alternatives to the project.¹²⁰ If a transmission project passes the CPUC's needs assessment and environmental review, the Commission grants a CPCN and the project is ready for construction.

2. *Procurement Process*

The "procurement process" is a planning process where the IOUs meet with the CPUC every year to determine what combination of generation, transmission, and demand-side options will best serve consumers.¹²¹ This planning phase is considered an ideal forum for long term planning by bringing together decision-makers to discuss the best

112. CAL. PUB. UTIL. CODE § 1001; HATTEVIK, *supra* note 36, at 6; ISSUES AND ACTIONS, *supra* note 36, at 60.

113. Cf. HATTEVIK, *supra* note 36, at 6.

114. HATTEVIK, *supra* note 36, at 14.

115. *Id.*

116. ISSUES AND ACTIONS, *supra* note 36, at 60.

117. See California Environmental Quality Act, CAL. PUB. RES. CODE § 21100 (West 2004).

118. See National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370(a) (2004); Ramo, *supra* note 89, at 15.

119. CAL. PUB. RES. CODE § 21068.

120. See *id.* at § 21100(a)-(b) (West 2004).

121. See HATTEVIK, *supra* note 36, at 15.

way to allocate resources to meet system needs.¹²² Once the IOUs and CPUC have agreed upon the optimal combination of generation, transmission, and energy conservation, the CPUC approves the plan.¹²³

To summarize, before deregulation the CPUC studied the need for new transmission projects.¹²⁴ Deregulation confused the process by giving to the ISO the job of planning for transmission grid reliability while retaining in the CPUC the power to grant a CPCN.¹²⁵ As a result, both the CPUC and the ISO conduct parallel needs assessments before a transmission project is approved.

C. ROLE OF THE CEC

The CEC is California's "primary energy policy and planning agency."¹²⁶ As such, it has two important functions in electricity planning. First, it licenses new thermal power plants of 50 megawatts (MW) or more.¹²⁷ A megawatt is enough power to light roughly 750 homes; a megawatt-hour lights those same homes for an hour.¹²⁸ Local governments are responsible for licensing smaller plants and those which are non-thermal (i.e. they run on renewable energy).¹²⁹ Second, the CEC has an important policy-making role.¹³⁰ In 2002, the California Legislature passed SB 1389, requiring the CEC to create an Integrated Energy Policy Report (IEPR) every two years.¹³¹ In this process, the CEC is required to "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices" and then use these assessments to "develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety."¹³² Because the IEPR is supposed to assess "all aspects"¹³³ of the energy industry, the CEC now has a statutory

122. *Id.* at 16.

123. *See id.* at 15.

124. *Supra* Part II.B.1.

125. HATTEVIK, *supra* note 36, at 6.

126. ISSUES AND ACTIONS, *supra* note 36, at 60.

127. HATTEVIK, *supra* note 36, at 5. A thermal power plant is the typical power plant. It uses combustion of a fossil fuel (usually coal, oil, or in California, natural gas) to generate heat which turns a turbine in order to create a spark which is captured and used as electricity. *See* Bhagwat, *supra* note 5, at 97. Nuclear plants are not considered thermal plants. *See id.* The CEC is also responsible for licensing nuclear plants. HATTEVIK, *supra* note 36, at 5.

128. Robert B. Martin, III, Note, *Sherman Shorts Out: The Dimming of Antitrust Enforcement in the California Electricity Crisis*, 55 HASTINGS L.J. 271, 272 n.6 (2003) (citing Jaskow, *supra* note 5, at 375).

129. HATTEVIK, *supra* note 36, at 5-6.

130. *See* ISSUES AND ACTIONS, *supra* note 36, at 60.

131. CAL. PUB. RES. CODE § 25302(a) (West 2004).

132. *Id.* § 25301(a).

133. *Id.*

role in transmission planning.¹³⁴ The first IEPR came out in December 2003.¹³⁵

D. THE ROLE OF FERC

Under the Federal Power Act of 1935, FERC has jurisdiction over "the transmission of electric energy in interstate commerce."¹³⁶ This means that FERC oversees transmission projects between states, such as lines between California and the Southwest, Utah, and the Pacific Northwest.¹³⁷ Given the significant amount of electricity currently flowing from outside the state,¹³⁸ FERC policies significantly impact California's transmission system.

FERC policy is especially important when California wants to connect with a new power plant. One might assume that power plants are built close to transmission lines so they will be easily connectible and ready to serve consumers. But this is not the case. Because power plants are expensive machines which heavily burden the environment,¹³⁹ deciding where to build one depends on many factors, such as access to fuel for combustion and water for cooling.¹⁴⁰ Thus, "[m]ost generation plants . . . tend to be located in rural areas some distance from centers of consumption for some combination of economic, environmental, safety, and (in the case of hydroelectric power) geographic reasons."¹⁴¹ Transmission lines must be built to reach these distant plants.

FERC has power to change this but has decided not to do so. FERC requires power plant builders to pay the costs of new transmission lines up front, but allows them to be repaid with interest within five years.¹⁴² Because the costs of new lines will be recovered so quickly, generators have virtually no incentive to build power plants close to existing transmission lines.¹⁴³ Through such pricing policies, FERC significantly impacts transmission planning in California.

134. *Id.* § 25303(a)(3) ("The [CEC] shall conduct electricity and natural gas forecasting and assessment activities . . . including . . . [a]ssessment of the availability, reliability, and efficiency of the . . . California electricity and transmission system capacity and use."); HATTEVIK, *supra* note 36, at 8.

135. IEPR, *supra* note 9.

136. 16 U.S.C. § 824(b) (2004); *N.Y. v. Fed. Energy Regulatory Comm'n*, 535 U.S. 1, 1 (2002).

137. See ISSUES AND ACTIONS, *supra* note 36, at 61.

138. ENERGY ACTION PLAN, *supra* note 48, at 4 ("Fifteen to thirty percent of statewide electricity demand is served from sources outside state borders."); see also HATTEVIK, *supra* note 36, at 4 (mentioning that California is "import dependent"); Yuffee, *supra* note 12, at 67 (stating that California relies heavily on imported power during periods of peak demand).

139. Bhagwat, *supra* note 5, at 97.

140. HATTEVIK, *supra* note 36, at 8; Bhagwat, *supra* note 5, at 97.

141. Bhagwat, *supra* note 5, at 97.

142. HATTEVIK, *supra* note 36, at 18-19.

143. See *id.* at 20.

III. PROPOSALS TO CHANGE CALIFORNIA'S ELECTRICITY TRANSMISSION REGULATORY SYSTEM

The old adage "too many cooks spoil the soup" resonates when discussing California transmission regulation.¹⁴⁴ Overlapping jurisdictions and redundancy in reviewing new projects have led to delays in planning and permitting transmission lines.¹⁴⁵ This Part first provides an overview of the main criticisms leveled at California's transmission regulatory system, and then lays out two specific proposals to change the system. The next Part provides some analytic tools to help the reader chart for him or herself the best course for California's future electricity transmission system.

A. CRITICISMS OF THE CURRENT REGULATORY SYSTEM

The transmission licensing process has been roundly criticized by state and federal governmental officials, academics, and private industry actors. State officials closest to the process have sometimes been its harshest critics, describing the process as "extremely complicated, balkanized, and redundant."¹⁴⁶ Other officials have said that the "overlapping and conflicting processes associated with project planning, assessment, licensing and approval" are among the "biggest impediments to the development of new transmission projects in California."¹⁴⁷ Summing up the criticisms, the CEC states that

[t]he permitting of transmission lines in California currently suffers from jurisdictional responsibilities that are fragmented and overlapping, environmental analyses that are inconsistent, and inadequate consideration of regional and statewide benefits. As a result, existing permitting processes create duplication between local, state, and federal agencies, delay in approvals, and denial of needed projects.¹⁴⁸

These criticisms warrant more elaborate consideration given the important role transmission plays in securing reliable, efficient, environmentally benign energy.¹⁴⁹ Three criticisms are particularly relevant: (1) duplicative needs assessment; (2) absence of a model to predict future transmission needs in a competitive market; and (3) lack of coordinated planning between the CEC, ISO, CPUC, and IOUs.

1. *Duplicative Needs Assessment*

One common criticism relates to the way new transmission projects

144. See HUGH HENRY BRACKENRIDGE, *LAW MISCELLANIES, reprinted in AMERICAN LAW: THE FORMATIVE YEARS 157* (Morton J. Horwitz & Stanley J. Katz eds., N.Y., Arno Press 1972).

145. See *supra* Part II.

146. HATTEVIK, *supra* note 36, at 2.

147. CONSULTANT REPORT, *supra* note 9, at 18 ("Changes to the current process are sorely needed.").

148. IEPR, *supra* note 9, at 19.

149. See *supra* Part I.B (discussing various benefits of an adequate transmission infrastructure).

are evaluated. As discussed above, before building a new transmission project a utility must pass both the ISO and the CPUC,¹⁵⁰ and at both steps the project is assessed for its need.¹⁵¹ This means that after a lengthy process of providing transmission assessments, choosing a project from a range of alternatives, and convincing the ISO it is needed, a project proponent must again establish need before the CPUC. In practice, however, the second needs assessment may be less duplicative than it appears because CPUC does participate informally in the ISO process.¹⁵² Nevertheless, duplication of effort wastes resources by leading to unnecessary delays in project approval, costing the state billions in lost opportunities.¹⁵³ This process sometimes kills important projects, increasing the kind of regulatory uncertainty which is often blamed for discouraging investment in new electricity infrastructure.¹⁵⁴

2. *Inadequate Model for Assessing "Need"*

Since two separate agencies determine need, it is perhaps not surprising that they each have their own criteria for doing so, and that these criteria are sometimes inconsistent. This is due to the fact that state regulators have not yet agreed upon a universal methodology for determining need.¹⁵⁵ One approach is to determine whether the benefits of a new project outweigh the costs.¹⁵⁶ Such forecasting is crucial before regulators can approve expensive transmission projects which are ultimately funded by ratepayers.¹⁵⁷ Under the vertically integrated electricity system, this cost-benefit approach was workable because it was relatively simple to determine how a new transmission project would impact ratepayers of a particular IOU. Since a single utility owned all the components needed to generate, transport, and deliver electricity to its

150. See *supra* Part II.A-B.

151. HATTEVIK, *supra* note 36, at 6.

152. See *id.* at 11.

153. See *supra* Part I.B.3 (citing billions of dollars in savings through transmission system expansion).

154. See, e.g., IEPR, *supra* note 9, at 6; Yuffee, *supra* note 12, at 68.

155. HATTEVIK, *supra* note 36, at 14.

156. *Id.* A cost-benefit analysis is not the only way to determine "need," but it is the test used in California for so-called "economic" projects. These projects are justified on economic grounds, i.e., they will serve to reduce costs to consumers. *Id.* at 9. Since these projects exist to save money, a cost-benefit analysis seems appropriate. In contrast, if a project exists not to reduce costs but rather to ensure overall system reliability, it is defined as a "reliability" project. *Id.* A cost-benefit analysis also seems appropriate for these projects since reliability saves money. However, it would seem inadequate because overall system reliability concerns more than money: it ensures people can go about their daily lives undisturbed by electricity shortages. Perhaps such factors are not incorporated into determining "need" because it is easier to quantify economic criteria (i.e., reductions in utility bills) than the reliability criteria (i.e., social happiness borne of a stable electrical supply).

157. For example, the cost of building a new 500 kV line 240 miles from San Diego to the Southwest is estimated at \$500 million to \$2 billion. Interim Opinion on Transmission Constraints: Southern California Link to the Southwest, Decision 01-10-070 at 14 (Cal. Pub. Utils. Comm'n Oct. 25, 2001) [hereinafter CPUC Decision 01-10-070].

customers, the IOU had the information needed to decide whether the costs of the new project were outweighed by the benefit of connecting to a new power plant.¹⁵⁸

Deregulation changed all that, and the cost-benefit analysis has proven unworkable. For example, some industry watchdogs allege that generators strategically bid electricity into regions of California with congested power lines to benefit from market rules allowing them to be paid to stop sending this power.¹⁵⁹ Building new transmission capacity would make these payments unnecessary, thus saving the state money, but the ISO has no way to count these savings in its decision process.¹⁶⁰ Without an agreed-upon way to decide when a project is needed, the CPUC cannot legally delegate its statutory responsibility for certifying new transmission projects.¹⁶¹

While deregulation exposed these shortfalls, uneasiness with models to determine need predates deregulation. The methodologies have been criticized for failing to take into account the long-term benefits of transmission improvements, such as increased system reliability and expanded access to regional power supplies.¹⁶² Likewise, some of the main benefits of transmission occur when unexpected events befall the state,¹⁶³ but current models do not consider such events in determining need.¹⁶⁴ Finally, current models fail to consider alternatives to new transmission lines, such as new generation and energy conservation.¹⁶⁵ This is a fundamental point: transmission, generation, and conservation are closely related because they are all means of achieving the same end, namely, the provision of electricity service. To that end, each must be considered alongside the others to decide the best way to serve consumers. Keeping the big picture in mind, the end goal is to ensure an electric industry which serves the best interests of Californians. Assessments and models to determine need are where the rubber hits the road in serving those interests.

3. *Lack of Coordinated Planning Between CEC, ISO, CPUC, and IOUs*

Despite the serious implications of an inadequate and duplicative needs assessment model, critics have pointed to an even more

158. CPUC Decision 01-10-070, *supra* note 157, at 15; Bhagwat, *supra* note 5, at 98–99; HATTEVIK, *supra* note 36, at 14.

159. Rose, *supra* note 94, at A-1.

160. CPUC Decision 01-10-070, *supra* note 157, at 15; HATTEVIK, *supra* note 36, at 14.

161. See CAL. PUB. UTIL. CODE § 1001 (West 2004); HATTEVIK, *supra* note 36, at 15.

162. IEPR, *supra* note 9, at 18.

163. See *supra* Part I.B.1 (discussing how transmission lines help ensure system reliability against unforeseen events such as plant outages, droughts, and heat storms).

164. IEPR, *supra* note 9, at 18; CONSULTANT REPORT, *supra* note 9, at 17.

165. IEPR, *supra* note 9, at 18; CONSULTANT REPORT, *supra* note 9, at 17.

fundamental and structural problem with the transmission licensing process:

[m]any states have either generation and transmission siting under the purview of one state agency (e.g. Arizona, Nevada) or do not have any state generation siting at all (e.g. Idaho, Pennsylvania, Alaska). In contrast, California has split generation and transmission siting authority between two state entities and among local governments.¹⁶⁶

The problem with "split generation and transmission siting authority" is that it hinders necessary coordination. Why is coordination important? Meeting new electricity demand is possible through a range of alternatives, such as building a new power plant, expanding transmission connections, encouraging conservation, or a combination thereof.¹⁶⁷ Ideally a regulator should be able to consider all these factors in planning how to meet projected demand.¹⁶⁸ The separation of transmission and generation planning has created a "fragmented and uncoordinated planning process," leaving regulators on both sides with an incomplete picture of the state's electricity options.¹⁶⁹

Because regulators cannot see the whole picture, sometimes statewide interests are sacrificed for those of individual project proponents. While serving the needs of the utilities and the ISO, the current fragmented planning process may be overlooking statewide interests like development of future renewable energy, overall system efficiency and reliability, and the environmental performance of the system.¹⁷⁰

This lack of coordination is supposed to be made up for in the procurement process where the IOUs meet with regulators at the CPUC every year to determine what combination of generation, transmission, and demand-side options will best meet consumer demand.¹⁷¹ However, in reality the procurement process does little to coordinate planning for three main reasons.

First, the process fails to consider the impact of any new power plants on the already congested transmission system.¹⁷² The process is too limited in scope and doesn't consider whether a proposed power plant will actually be able to deliver its electricity.¹⁷³ This has led to some serious anomalies, such as the construction of new power plants across

166. HATTEVIK, *supra* note 36, at 5.

167. See IEPR, *supra* note 9, at 8; HATTEVIK, *supra* note 36, at 15.

168. See IEPR, *supra* note 9, at 8; HATTEVIK, *supra* note 36, at 15.

169. HATTEVIK, *supra* note 36, at 3.

170. IEPR, *supra* note 9, at 18 (citing ISSUES AND ACTIONS, *supra* note 36, at 61-62).

171. See HATTEVIK, *supra* note 36, at 15.

172. CONSULTANT REPORT, *supra* note 9, at 16.

173. *Id.*

the U.S.-Mexican border despite inadequate transmission.¹⁷⁴

Second, the procurement process can be an ideal forum to find new ways to meet demand in constrained areas like San Francisco and San Diego, but it fails to do so. These areas are particularly susceptible to electricity outages because of their lack of electricity generation or transmission infrastructure, so the state contracts for "reliability must-run" generation to ensure local reliability.¹⁷⁵ By failing to consider such contracts in its long-term planning with the IOUs, the CPUC misses an opportunity to fix the electricity problems facing San Diego and San Francisco.¹⁷⁶

Finally, these problems with coordinated agency planning have been exacerbated by deregulation and laissez-faire federal policies. In 1996, FERC Order 888 required utilities to open their transmission lines so that other companies could use them to sell electricity into the system.¹⁷⁷ Determining need for new lines involves predicting potential future power plants that may or may not ever be built. But deregulation regulators are left hopelessly in the dark because they have no role in shaping plant location decisions. Predicting the future usefulness of a given transmission project depends on choices made by unregulated companies that do not participate in the procurement process.

B. PROPOSALS TO CHANGE THE REGULATORY SYSTEM

Such widespread criticism has not been lost on California policymakers. Two proposals have emerged to address them. The first, would counter the redundancy in determining need, and give the ISO the job of determining need by applying an agreed-upon methodology capable of accurately modeling market factors, and the CPUC would then issue a CPCN. The other proposal responds to the lack of coordinated planning by centralizing transmission licensing under the CEC, the agency which already licenses power plants. Some historical context is needed to understand these proposals.

I. *Historical Context*

Each proposal can be seen as occupying a middle ground between two historical modes of thinking about the role of regulation. Those two schools of thought are the "integrated resource planning" model which dominated during the 1970s and 1980s, and the market liberalism of the 1990s.¹⁷⁸

174. See *supra* Part I.B.3.

175. See *supra* Part II.A.

176. HATTEVIK, *supra* note 36, at 11-13.

177. Bhagwat, *supra* note 5, at 100; see Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. 21540 (Fed. Energy Regulatory Comm'n 1996).

178. For a comprehensive analysis of the evolution of regulation as we now know it, see Duane,

The model of "integrated resource planning" first developed in California in the 1970s as the CEC set the existing regulation paradigm on its head.¹⁷⁹ Instead of the traditional approach to electricity regulation which sought to increase supply in order to meet new demand, the CEC flipped the equation by embracing conservation as a way to reduce demand, thereby eliminating the need for new supply.¹⁸⁰ This "demand-side management" had revolutionary implications because it enabled California to cut its annual rate of demand growth by 75% to 80% through the 1970s and 1980s and to avoid building hundreds of new power plants.¹⁸¹ This approach was part of a national trend that recognized the importance of thinking not only of increasing supply, but also on decreasing demand through conservation.¹⁸²

"Integrated resource planning" was subsequently challenged in the early 1990s by a new paradigm promoting deregulation of wholesale electricity markets and reduced industry oversight by public utilities commissions.¹⁸³ Deregulation was consistent with the social and political climate of the day, as this was "the age of market triumphalism" when "markets were the answer, government was the problem, and anybody who thought otherwise was either Rip Van Winkle or a card-carrying liberal clinging to the past."¹⁸⁴ Deregulation of the airline, telecommunications, natural gas, and trucking industries served as a

supra note 1, at 476-94.

179. *See id.* at 482-87. The existing regulation model was known as the "utility consensus." *Id.* at 476. This model drew force from the larger political progressivism of the time, which sought to curtail the opportunistic business practices of the early 20th century. *See* GEORGE MOWRY, *THE CALIFORNIA PROGRESSIVES 11-12* (1951). It drew on the economic theory of "natural monopolies," which posits that

the competitive running of wires and pipes above or below ground in duplicate, triplicate, or more would be so obviously inefficient and a costly use of resources that we 'naturally' permit monopolistic supply of such goods with decreasing average costs. However, price gouging of the consumer will not be prevented by the classic workings of the competitive elements, and too little electricity will be produced and consumed, so regulation substitutes for the missing competition.

MICHAEL D. REAGAN, *REGULATION: THE POLITICS OF POLICY* 36-37 (1987), *cited in* Duane, *supra* note 1, at 476. Natural monopoly theory justified governmental regulation of the electricity industry and formed the basis for policies which "granted individual companies exclusive franchises to provide power within a specific geographic area as long as their rates were regulated by state regulatory commissions based on the cost of providing service, including a reasonable return on investment." Duane, *supra* note 1, at 476-77. Recognizing that the inherent nature of electricity (i.e., that it cannot be stored and so must be bought at almost the same time it is consumed) further complicated things, the "utility consensus" stands for the proposition that sometimes regulation is necessary to secure the greatest benefits for all. *See id.* at 477-78.

180. *Id.* at 483-84.

181. *Id.* at 484-85.

182. *Id.* at 487-88.

183. *See id.* at 496.

184. *Id.* at 491 (citing Michael Watts, *Liberation Ecology: Development Sustainability, and Environment in an Age of Market Triumphalism*, in *LIBERATION ECOLOGIES: ENVIRONMENT, DEVELOPMENT, AND SOCIAL MOVEMENTS* (Richard Peet & Michael Watts eds., 1996)).

model for deregulation of the electricity industry.¹⁸⁵ Deregulation proponents challenged the “natural monopoly” theory, instead putting faith in markets to secure incremental efficiency improvements.¹⁸⁶ By the mid-1990s deregulation had replaced “integrated resource planning” and California became the poster child of the new order.

What these two approaches have in common is that they are both points on the arc of a pendulum which has swung back and forth throughout American history as people continually change regulatory approaches to meet the needs of society. The following proposals to change the electricity transmission regulatory system represent a compromise between these two competing ideologies.

2. *Current Proposals to Change the System*

The following are two competing proposals to change the transmission licensing process in California. Both proposals lay out different visions for the future of transmission planning and licensing. Decision-makers will eventually be forced to choose between these alternative approaches, or come up with something better.

a. *Create a Universal Methodology for Determining “Need” and Require the CPUC to Defer to the ISO’s Judgment*

In response to the widespread criticism of the state’s electricity transmission licensing process, in 2003 the state’s principal energy agencies adopted a joint Energy Action Plan laying out broad goals for California’s energy industry as well as six specific actions to achieve those goals.¹⁸⁷ One of those actions calls for an expansion of the state’s electricity transmission system, and calls on the CPUC to propose changes to its CPCN process to achieve this objective.¹⁸⁸

In response to the Energy Action Plan, the CPUC issued an Order proposing changes to its transmission assessment process.¹⁸⁹ This Order

185. *Id.* at 489–90.

186. Hoffman, *supra* note 1; *id.* at 490.

187. ENERGY ACTION PLAN, *supra* note 48, at 2.

188. *Id.* at 7. The exact wording is important:

The Public Utilities Commission will issue an Order Instituting Rulemaking to propose changes to its Certificate of Public Convenience and Necessity [CPCN] process, required under Public Utilities Code § 1001 et seq., in recognition of industry, marketplace, and legislative changes, like the creation of the CAISO and the directives of SB 1389. The Rulemaking will, among other things, propose to use the results of the Energy Commission’s collaborative transmission assessment process to guide and fund IOU-sponsored transmission expansion or upgrade projects *without having the PUC revisit questions of need for individual projects in certifying transmission improvements.*

Id. (emphasis added). By calling for changes to the CPCN process in light of the creation of the ISO and the directives of SB 1389, the energy agencies are likely referring to the duplicative needs assessment process which was left after deregulation. This interpretation is bolstered by the final clause, indicating the agencies’ dissatisfaction with the CPUC revisiting questions of need for new transmission projects.

189. See Order Instituting Rulemaking on Policies and Practices for the Commission’s

proposes two related changes: (1) to adopt a universal methodology for determining the need for a new project; and (2) to allow the ISO to apply this standard during its needs assessment process without the CPUC revisiting the question of need except to make sure the methodology was correctly applied.¹⁹⁰ The CPUC requested that the ISO develop the new methodology and submit it for CPUC approval.

The ISO worked with outside consultants for a year to develop this new methodology, which it released on February 28, 2003.¹⁹¹ The methodology strives to fill the void left by deregulation by including four new factors in a transmission needs assessment: (1) the availability of imports and exports of electricity; (2) the availability and dispatch of hydroelectric and thermal generation; (3) future power plant additions; and (4) market power.¹⁹² By addressing each of these factors in one comprehensive model, the ISO believes its methodology "far exceeds anything that has been done to date in the area of transmission planning studies."¹⁹³

After adoption of the methodology, the CPUC will defer to the ISO's needs assessment.¹⁹⁴ When a project emerges from the ISO planning process, instead of conducting its own needs assessment, the CPUC will merely check to see that the methodology was correctly applied in the ISO process.¹⁹⁵ This will largely eliminate the inefficiency of conducting duplicative needs assessments at both the ISO and the CPUC.¹⁹⁶ Through adopting the methodology and double-checking to ensure its correct application, the CPUC believes it will adequately comply with its statutory duties for determining need¹⁹⁷ while resolving the regulatory redundancy that has been blamed for killing needed transmission projects.

b. *Centralize Transmission Planning Under the CEC*

The second proposal seeks to centralize transmission planning by adding transmission permitting to the CEC's existing duty over power plant licensing. The CEC currently licenses thermal power plants of 50 MW or more and plays an indirect role in transmission planning through publishing its Integrated Energy Policy Reports.¹⁹⁸ In response to calls for

Transmission Assessment Process, R.04.01.026 (Cal. Pub. Utils. Comm'n Jan. 22, 2004).

190. *Id.* at 5.

191. CAL. ISO & LONDON ECON. INT'L, A PROPOSED METHODOLOGY FOR EVALUATING THE ECONOMIC BENEFITS OF TRANSMISSION EXPANSION IN A RESTRUCTURED WHOLESALE ELECTRICITY MARKET (2003).

192. *Id.* at 4.

193. *Id.* at 1.

194. *Id.* at 1-2.

195. *Id.* at 5.

196. *Id.* at 1.

197. See CAL. PUB. UTIL. CODE § 1001 (West 2004).

198. See *supra* Part II.C.

greater integration between transmission and generation planning, the CEC proposes to centralize power around itself by calling on the Governor to give it power to license new transmission lines.¹⁹⁹ The CEC would model its transmission permitting process after the one it currently uses to license power plants.²⁰⁰ If adopted, this plan would work a major reorganization of the administration of electricity planning. The goal is to more fully integrate the transmission and generation planning processes to ensure that California's electricity system serves the needs of California as a whole, not just individual utilities or the ISO.²⁰¹

These two proposals to change the system seek to address the widespread perception that California's transmission planning process is "broken." It is thought that by eliminating the duplicative needs assessment through the application of an agreed-upon methodology for determining need, the state will realize the numerous benefits of a robust transmission system. And by integrating transmission and generation planning under the CEC, policymakers hope to further statewide interests in fostering renewable energy, a reliable and efficient electricity system, and environmental protection.

IV. ANALYTICAL MODEL TO ASSESS PROPOSALS

A. JUSTIFICATION

We now know that California's electricity transmission system has been roundly criticized, and that regulators and legislators have proposed specific changes to patch the holes left by deregulation. But the existence of a plan does not prove its wisdom, and change for its own sake is probably not a path California should tread. So, how do we determine the best approach to changing California's electricity transmission system?

Unfortunately, the current answer involves judging a proposal against ideological assumptions about the proper role of government in the marketplace, rather than bringing experience and nuanced technical understanding to the decision.²⁰² This is perhaps understandable given the

199. IEPR, *supra* note 9, at 20.

200. *Id.*

201. *See id.* at 8.

202. Bhagwat, *supra* note 5, at 121 (noting that "the designers of the California system appear to have shared a deep, ideological commitment to 'market forces,' a commitment which sometimes operated at the expense of careful consideration of how *actual* markets perform"); Duane, *supra* note 1, at 497 (mentioning that "[b]y trying to offer something for everybody, [California's deregulation law] was really a political compromise rather than an analytically-driven piece of legislation that reflected the technical complexities of the industry and the industry's regulatory history"); Joskow, *supra* note 5, at 370 (Stating that, in California's deregulation debates, "[i]deological rhetoric played a bigger role than serious analysis or practical experience drawn from other countries. . . . Getting it done fast and in a way that pandered to the many interests involved became more important than getting it right."); cf. Duane, *supra* note 1, at 539-40 ("[T]he relevant question is how to improve

complexity of the system.²⁰³ But while understandable, this is no way to govern. Policymakers have a responsibility to rationally consider competing policy choices without prejudging or merely seeking to justify preexisting opinions. But without coherent factors to weigh, policymakers are left unguided in this process.

This Part provides some guidance by proposing four factors to consider in deciding between competing proposals to change California's electricity transmission regulatory system: reliability, rate stability, efficiency, and fairness. The first three factors were offered by Professor Timothy P. Duane as "three of the policy goals of the regulatory regime" for electricity.²⁰⁴ The last factor, fairness, is a central principle of the Environmental Justice movement and ensures that social justice is considered.

B. HOW THE MODEL WORKS

At the outset, something must be said to clarify how this model works. The factors are intended to be in tension—increasing some will necessarily diminish others. In other words, no proposal will further reliability, rate stability, efficiency and fairness all at once. This ensures that diverse values are weighed before making a decision. And because each proposal will further some factors and not others, the weight given to each factor will influence the outcome of the analysis. Weighing the factors may depend on the specific context, and experience must inform the process if it is to be useful in guiding regulatory policy choices. The thought behind proposing a multifactor test is to counter the "one-dimensional" character of the regulatory policy debate by providing a vocabulary for discourse which illuminates the assumptions underlying specific proposals.²⁰⁵

The four factors interrelate in meaningful ways. Some tend to be complimentary, while others are mutually exclusive. For example, ensuring reliability usually comes at the expense of efficiency. It costs money to purchase reserve capacity, dedicate resources for planning, and invest in new infrastructure like transmission lines—costs which will be passed on to consumers in higher electricity bills.²⁰⁶ Such risk-averse measures—like paying for expensive reserve margins—will also harm fairness interests because electricity bills are regressive and

efficiency without sacrificing system reliability of price stability. This is a different question from how to deregulate another industry that seems stodgy and bureaucratic.").

203. See Duane, *supra* note 1, at 535–36. For a useful discussion of the unique difficulty in tinkering with regulation of the electricity industry, see generally *id.*

204. *Id.* at 538.

205. See Bhagwat, *supra* note 5, at 116 (noting "one-dimensional" character of debate).

206. However, California's transmission capacity investments over the years have saved billions of dollars—hardly an inefficient policy. See *supra* Part I.B.

disproportionately burden the most vulnerable.

Efficiency usually decreases reliability and rate stability, as California's deregulation experience shows.²⁰⁷ Reliability increases efficiency over the long-term by ensuring the system lives to see another day.²⁰⁸ Reliability also buttresses fairness because procedural fairness is the first casualty when overall system reliability is threatened. For example, California provided fast-track licensing processes for new power plants during the energy crisis.²⁰⁹ The CEC began licensing new "peaker" power plants after only three weeks of review, a process which was "truly devoid of any pretense of meaningful participation."²¹⁰ This example shows how fairness can give way to expediency when reliability is threatened.

Interestingly, efficiency and fairness are not mutually exclusive.²¹¹ By replacing top-down regulation with streamlined processes, markets can deliver rate savings that greatly benefit those who have the least to pay.²¹² Rate stability also tends to further fairness interests as preventing price fluctuations will tend to benefit the people whose budgets are tightest and who can least absorb unexpectedly high rates.

While efficiency can be fair, fairness is often inefficient because public participation takes time and consumes scarce resources. To the extent that fairness tends to benefit discrete groups, such interests would appear to accrue to the few while burdening the many with costly delays. In practice, however, such burdens tend to be minimal, and in cases where public participation really threatens the security of the majority, the democratic process tends to intervene to remove such delays.²¹³

In short, this multifactor model helps bring rational order and a methodology to regulatory restructuring decisions. The next Part shows

207. Duane, *supra* note 1, at 538. Professor Duane states that reliability, rate stability, and efficiency,

cannot all be maximized simultaneously: If we want to maximize efficiency, sacrifices must be made in system reliability and rate stability. The advocates of [the] electricity deregulation project claim that there are no tradeoffs: If society would simply trust in the power of the market, it would be able to maximize all three of these policy goals. They are wrong.

Id.

208. Cf. Bhagwat, *supra* note 5, at 118 (discussing how electricity markets create inefficiencies by their inability to perform coordination and planning functions).

209. See Ramo, *supra* note 89, at 8.

210. *Id.* at 15-17. "Peaker" power plants are small plants used for periods of maximum demand. *Id.* at 15 n.60. They are only used for limited times because they have little or no pollution control. *Id.* at 20. Some still run on distillate oil, which is far more polluting than natural gas. *Id.*

211. See Bhagwat, *supra* note 5, at 116-17 (discussing the "one-dimensional" debate over the years between proponents of efficiency and proponents of fairness).

212. *Id.*

213. See generally Ramo, *supra* note 89 (discussing laws and regulations passed during the California energy crisis which curtailed public participation in power plant siting in order to ensure new generation supply).

one application of the factors to analyze the above-mentioned proposals to change California's electricity transmission regulatory regime.

C. THE FOUR FACTORS

1. *Reliability*

According to the California Legislature, "[r]eliable electric service is of utmost importance to the safety, health, and welfare of the state's citizenry and economy."²¹⁴ Keeping the lights on is the priority of a reliability-based system, and this is accomplished by ensuring adequate supply to meet demand. One way of ensuring adequate supply is by requiring a "reserve margin," which is a certain amount of supply on "reserve" in case it is needed.²¹⁵ Another way to ensure reliability is through long-term planning.²¹⁶ Such planning was traditionally performed by a regulated utility with the oversight of regulators.²¹⁷ This was the hallmark of the "integrated resource planning" school, which ensured reliability through long-term conservation efforts aimed at bringing demand down to meet supply.²¹⁸ Planners anticipate needed future investments in electricity infrastructure, like new power plants and transmission lines, as a way to foster reliability by creating supply and the ability to deliver it on demand. Such reliability measures tend to create an environment of regulatory certainty, often considered a prerequisite for attracting new investment in a system.²¹⁹

2. *Rate Stability*

Ensuring rate stability requires minimizing electricity price fluctuations. Under the pre-deregulation cost-of-service industry, rate stability was ensured by the CPUC which set prices for electricity based on the cost of production plus a reasonable rate of return.²²⁰ Price stability became an important consideration after deregulation. The most volatile price fluctuations tend to occur on so-called "spot markets," which are venues where sellers bid electricity which is bought by purchasers to meet immediate demand.²²¹ California's over-reliance on spot market purchases was one of the causes of the state's painful price

214. CAL. PUB. UTIL. CODE § 330(g) (West 1994).

215. See Bhagwat, *supra* note 5, at 118 (noting that reliability includes "assurances of adequate reserve capacity").

216. *Id.* at 115 (arguing that the "root cause of California's crisis was clearly a failure of *long term* planning, to ensure that supply kept up with demand").

217. *Id.*

218. See Duane, *supra* note 1, at 487-88.

219. See, e.g., Yuffee, *supra* note 12, at 68 (stating that California's regulatory uncertainty of the late 1990s discouraged investment in electricity infrastructure); cf. Duane, *supra* note 1, at 538.

220. Duane, *supra* note 1, at 476-77.

221. Bhagwat, *supra* note 5, at 118 (describing a spot market as a "pure, contemporaneous exchange").

spikes during the energy crisis.²²²

But such price instability is not an inevitable result of a deregulated market. California would have experienced less severe rate fluctuations had it allowed utility companies to purchase some of their electricity through long-term contracts with generators, instead of relying solely on the spot market for purchases.²²³ Such long-term contracts can serve important rate stability interests.²²⁴ Also, much of the rate fluctuation was caused by factors which may have increased costs even under a regulated industry anyway, such as soaring fixed costs for natural gas to burn in the power plants, and decreased hydropower coming from the Northwest forcing California to rely on more expensive power plants.²²⁵ Markets can create rate stability if sufficient market participation, product diversity, and ease of distribution exist,²²⁶ although this is a whole lot easier said than done.

3. Efficiency

Transmission systems are considered “natural monopolies,” meaning that it makes more sense for all generators to share one set of lines than for each generator to build its own duplicate lines.²²⁷ Because of these natural monopoly traits, “the transmission network and its operation will be subject to continuing regulation.”²²⁸ But given these natural monopoly characteristics, what does the concept of efficiency add to the debate on transmission regulation?²²⁹

The concept of efficiency can enlighten debate on transmission regulation by highlighting areas where regulation is irrational, redundant, and ineffective. Efficiency focuses attention on whether regulatory systems impose undue delays, kill needed projects, and whether a given regulatory body is institutionally competent to accomplish its function. Considering efficiency in this sense adds value to transmission regulation debates.

222. Yuffee, *supra* note 12, at 69–70. California’s deregulation plan required utilities to rely solely on the spot market for electricity purchases. Bhagwat, *supra* note 5, at 115–16. In 2001, California electricity costs spiraled upwards to \$3,800 per MWh, roughly 100 to 200 times the average cost a year before. Duane, *supra* note 1, at 517.

223. Yuffee, *supra* note 12, at 69–70.

224. Long term contracts also help assure long-term planning consistent with enhancing overall system reliability. See Bhagwat, *supra* note 5, at 119.

225. Bhagwat, *supra* note 5, at 108–11 (discussing California’s bad luck in suffering through a convergence of multiple damaging factors that would have caused serious problems no matter what the structure of the electricity industry); see Duane, *supra* note 1, at 511 (noting California’s 20-fold increase in natural gas prices during 2000–2001, leading to dramatically increased electricity costs).

226. Ramo, *supra* note 89, at 5.

227. See Joskow, *supra* note 15, at 254.

228. *Id.* at 255.

229. *Id.* at 241, 247, 254.

4. *Fairness*

Generally speaking, fairness refers to treating likes alike.²³⁰ Fairness in electricity regulatory systems may require a number of actions to ensure that all people have equal opportunity to influence policy. Such actions often include providing notice of workshops to discuss proposed projects, studying the potential for projects to disproportionately burden poor or minority populations,²³¹ translating documents into non-English languages, and providing access to the system for those without means through the use of public liaisons like the CPUC's Public Advisor.²³²

The Environmental Justice movement can provide guidance on the meaning of fairness as it relates to transmission regulation.²³³ Growing out of the civil rights movement, Environmental Justice emerged as a policy doctrine in 1994 when President Bill Clinton signed Executive Order 12,898 directing each federal agency to "make achieving environmental justice part of its mission."²³⁴ The movement strongly emphasizes participation by poor people and people of color in agency decisions, including "the right to participate as equal partners at every level of decision-making including needs assessment, planning, implementation, enforcement and evaluation."²³⁵ As applied in the context of California's transmission regulatory process, this principle means that fairness requires that all people have the right to participate in the process from needs assessment to project evaluation.

V. APPLICATION OF THE FOUR FACTORS TO CURRENT PROPOSALS TO REFORM CALIFORNIA'S ELECTRICITY TRANSMISSION REGULATORY SYSTEM

Recall, the two proposals currently under consideration in California are: (1) the idea that redundant needs assessments at the ISO and CPUC justify giving the ISO sole responsibility for determining need through the application of an agreed-upon methodology; and (2) the CEC's proposal to reorganize the regulatory state by taking responsibility for licensing new transmission projects, in much the same way it currently licenses new power plants. These proposals are analyzed separately below.

230. See WEBSTER'S NEW WORLD COLLEGE DICTIONARY 509 (4th ed. 2002).

231. The CEC has conducted such studies. Ellen M. Peter, *Implementing Environmental Justice: The New Agenda for California State Agencies*, 31 GOLDEN GATE U. L. REV. 529, 570 (2001).

232. For information on the CPUC Public Advisor's outreach programs, see <http://www.cpuc.ca.gov/static/aboutcpuc/divisions/csid/public+advisor/index.htm> (last visited Jan. 6, 2004).

233. See CAL. GOVT. CODE § 65040.12(e) (West 2004) (defining "environmental justice" as the "fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies").

234. Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994); Ramo, *supra* note 89, at 12.

235. Ramo, *supra* note 89, at 13; see also Peter, *supra* note 231, at 538 (discussing the movement's emphasis on public participation).

A. GIVE THE ISO RESPONSIBILITY FOR DETERMINING NEED

Giving the ISO responsibility for determining need will enhance reliability. By lowering regulatory hurdles to the construction of new transmission lines, this proposal would allow the benefits of a robust transmission system to be realized. When transmission lines are licensed in a timely manner, electricity can be moved from place to place in order to reliably power homes and businesses. Redundant review of new transmission projects adds one more step at which a potentially important new project can be derailed. Reducing such regulatory uncertainty will encourage investment in new projects and help current projects move expeditiously forward.

By streamlining the process for new project approval, this proposal will result in greater efficiency. And because new transmission projects can result in billions of dollars in savings to consumers, constructing new transmission lines can be efficient by allowing scarce resources (i.e. consumer electricity payments) to be allocated to their most socially valuable use (i.e. investments in transmission lines which will pay great dividends to the state). Furthermore, because the ISO is relatively insulated from politics, it may be better able to license needed transmission lines over the outcry of local communities trying to protect themselves.

While allowing for a more efficient allocation of resources also furthers fairness interests, this proposal contains troubling implications for public participation. The ISO is not a state agency per se, but rather a corporation run for the “public benefit.” The ISO has been criticized for putting industry interests ahead of the public interest.²³⁶ Moreover, FERC recently tried to change the ISO governance structure to insulate it from public accountability.²³⁷ Although the D.C. Circuit held that this exceeded FERC’s statutory authority,²³⁸ the experience demonstrates that fairness interests may be jeopardized by investing too much authority in the ISO. In contrast, the CPUC is a constitutional agency in no danger of having its governance structure altered by federal regulators.²³⁹ The CPUC also has extensive regulations governing its practice and procedure.²⁴⁰

Giving the ISO responsibility for determining need may indirectly improve rate stability. Transmission system expansion can do much to relieve the congestion on California’s major transmission pathways. By

236. Ramo, *supra* note 89, at 24.

237. 93 F.E.R.C. 61,121, 61,362–64 (2000).

238. *Cal. Indep. Sys. Operator Corp. v. FERC*, 372 F.3d 395, 399 (D.C. Cir. 2004) (holding that FERC’s action was an “unprecedented invasion of internal corporate governance”).

239. See CAL. CONST. art. XII.

240. See http://www.cpuc.ca.gov/published/rules_prac_proc/26592.htm#p240_10663.

streamlining regulatory approval for new projects, the state can prevent electricity companies from intentionally bidding electricity into areas with congested transmission lines in order to increase prices. Reducing congestion would help ensure rate stability by reducing price fluctuations caused by market manipulation.

On balance, three of the four factors are served by the proposal: reliability, rate stability, and efficiency. Arguably, only fairness is diminished. Therefore, unless fairness is weighted much heavier than the others, it would seem that giving the ISO responsibility for determining the need for new projects would further the goals of California's electricity regulatory regime.

B. INTEGRATE TRANSMISSION LICENSING UNDER THE CEC

Integrating transmission licensing under the CEC will increase the reliability of the whole electricity system. By conducting long-term planning for both generation and transmission, the CEC will have information vital to ensuring that new demands are met through a mixture of supply and transmission additions. By centralizing planning, this proposal would help ensure that power plants and transmission lines are built and upgraded quickly and the overall system runs smoothly.

Integrated planning is generally considered a roadblock to efficiency. In this case, the CEC would be responsible for determining which new transmission lines are needed, which is the kind of function which markets are considered more capable of accomplishing. This proposal involves the kind of top-down regulation that led to marginal price increases and perceived regulatory waste under the pre-deregulation "integrated resource planning" era. However, the proposal has efficiency benefits. Allowing one agency to plan for generation and transmission enables regulators to consider the most cost-effective combination of power plant and transmission investments. This would tend to decrease unnecessary investments and eliminate wasted costs, thereby streamlining the regulatory system consistent with the dictates of regulatory efficiency.

The CEC is a politically accountable executive branch agency responsible for looking out for the people of California. It has adopted internal regulations incorporating environmental justice considerations into its decision-making process.²⁴¹ As such, giving the CEC power to license transmission lines may further fairness interests by protecting underserved communities.

Centralizing transmission and generation planning will result in greater rate stability. Centralized planning sends an unmistakable message to industry about the state of the regulatory environment. Such

241. CAL. CODE REGS. tit. 20, § 2022(b)(4) (West 2004).

signals are critical to ensure that companies are confident enough to make new investments in infrastructure. And infrastructure expansion will tend to reduce the market power of individual participants. Because market power results in price volatility, centralized planning will increase rate stability.

The CEC's proposal furthers interests in reliability, fairness, and rate stability, with at most a marginal decrease in efficiency. The critical factors needed to decide between the two proposals are therefore the two factors sacrificed by either one: efficiency and fairness. The marginal decrease in efficiency resulting from the CEC's proposal seems outweighed by the potential for fairness to be sacrificed in a process led by a politically insulated corporation. Giving the determination of need to the least politically accountable agency may further efficiency but is too problematic in terms of fairness. And bringing transmission licensing together with generation planning under the CEC may actually increase regulatory efficiency by fostering interagency coordination. Therefore, giving the CEC power to license new transmission lines strikes the best balance between ensuring efficient decisions without sacrificing public participation.

CONCLUSION

California's experiment with electricity deregulation is the most recent example of the state's willingness to be an energy policy maverick. But deregulation created a significant regulatory redundancy by giving both the CPUC and the ISO roles in transmission regulation. This reality jeopardizes the significant economic, environmental, and reliability benefits of a robust transmission system. In response, decision-makers are currently debating two competing proposals to erase this regulatory overlap. A four factor approach illustrates the strengths and weaknesses of each proposal much better than looking at a single factor only. Because the CEC's proposal to centralize transmission planning and licensing furthers reliability, rate stability, fairness, and to a lesser extent efficiency, this is the plan California should adopt. And if it does, the state will move from maverick to mainstream.
